CS 337E: Design for Global Grand Challenges

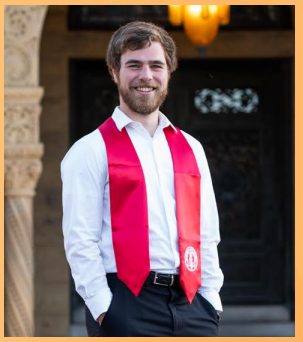
04. Low-fi Prototype & Evaluation

Team Mango

May 3, 2023

Team Mango

Homeschool Education



Nathan M.

CS, AI Coterm

Christina K.

Econ, HCI Coterm

Claire M.

CS, HCI Coterm

Grace Z.

CS, HCI Coterm

Problem Space & Solution

Problem Space + Solution Overview

All students deserve access to a quality education.

Not all homeschooling parents have the resources or experience to provide such an education, leading to unequal outcomes during schooling and later in life.

We want to level the playing field and provide resources for homeschooling parents to be better equipped and more empowered in their teaching, *for their kids*.

Mission Statement

Value Proposition

Mission Statement

Our mission is to empower homeschooling parents with tools for effective teaching and feedback delivery. We are dedicated to equipping parents as they seek to create engaging and inspiring learning environments at home.

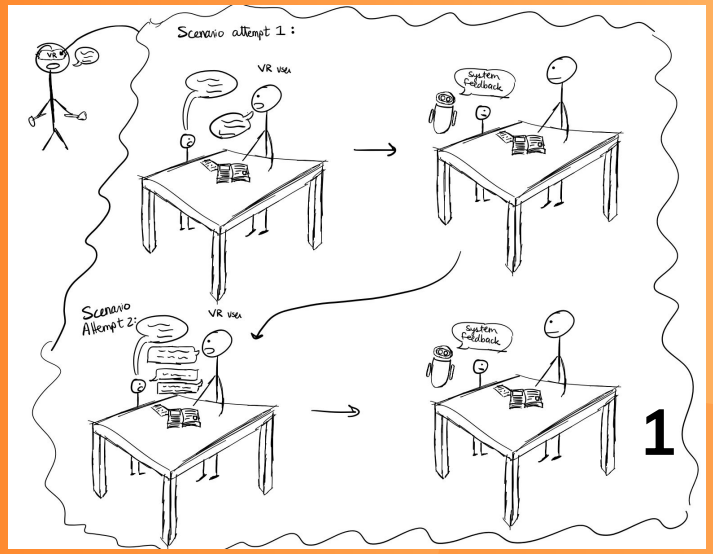
Value Proposition

1. **Personalized Feedback Solutions:**
    a. Live lesson tracking and generated reports to help parents tailor feedback strategies to their child's individual needs
    b. Actionable insights and recommendations

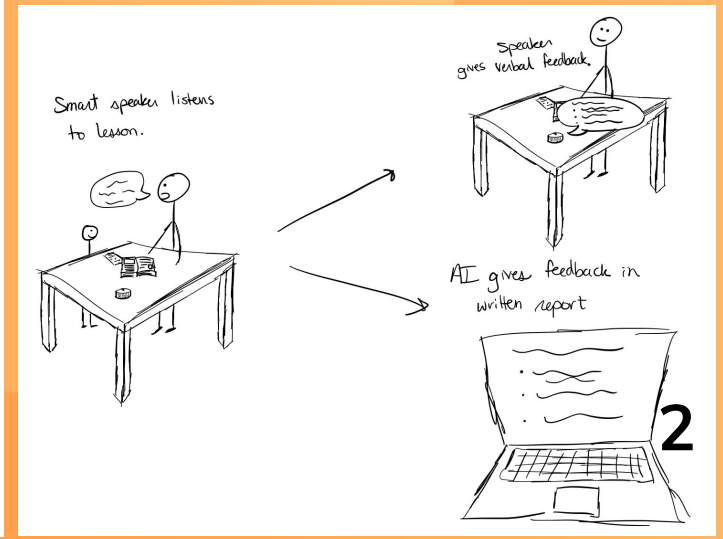
2. **Empowerment and Confidence:**
    a. Through insights on live lessons and simulations, gain experience and confidence in teaching

Concept Sketches

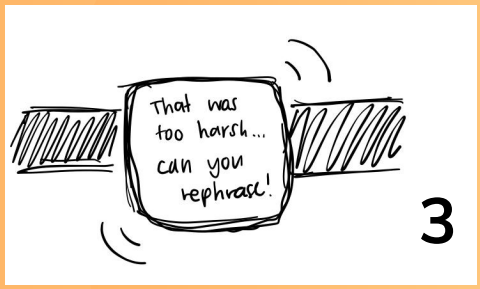
1. Virtual Reality



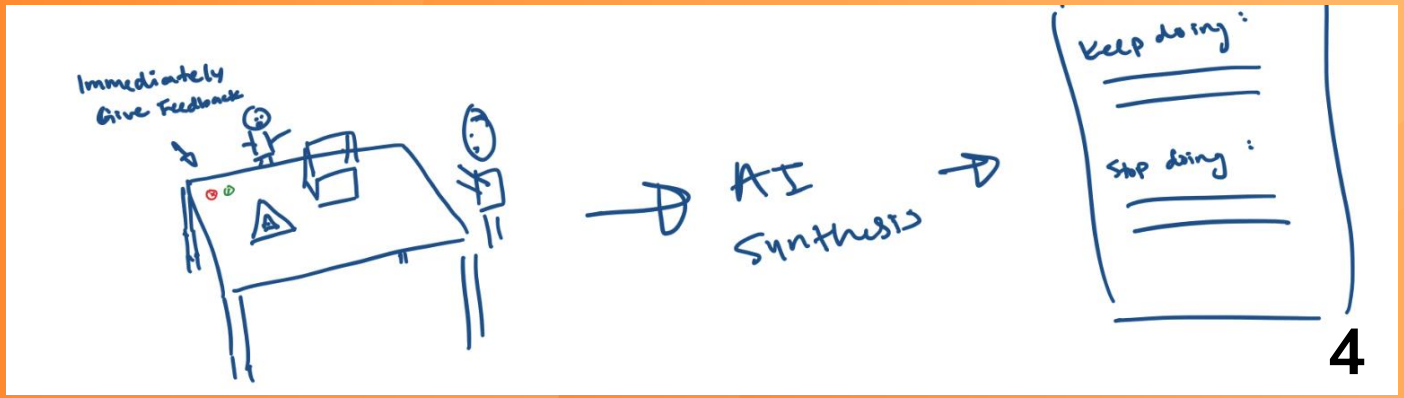
2. Smart speaker



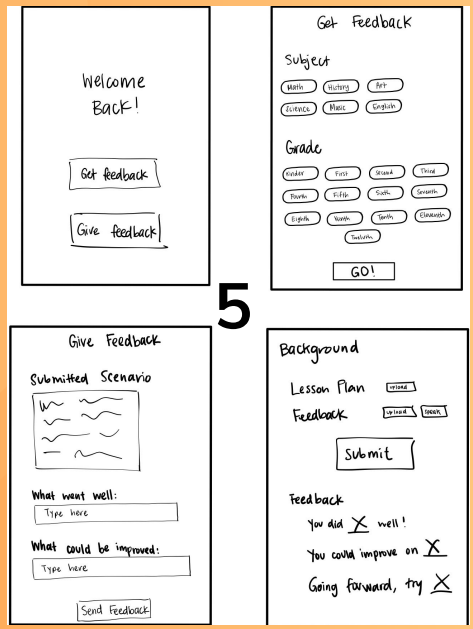
3. Wearable



4. Table-top interface



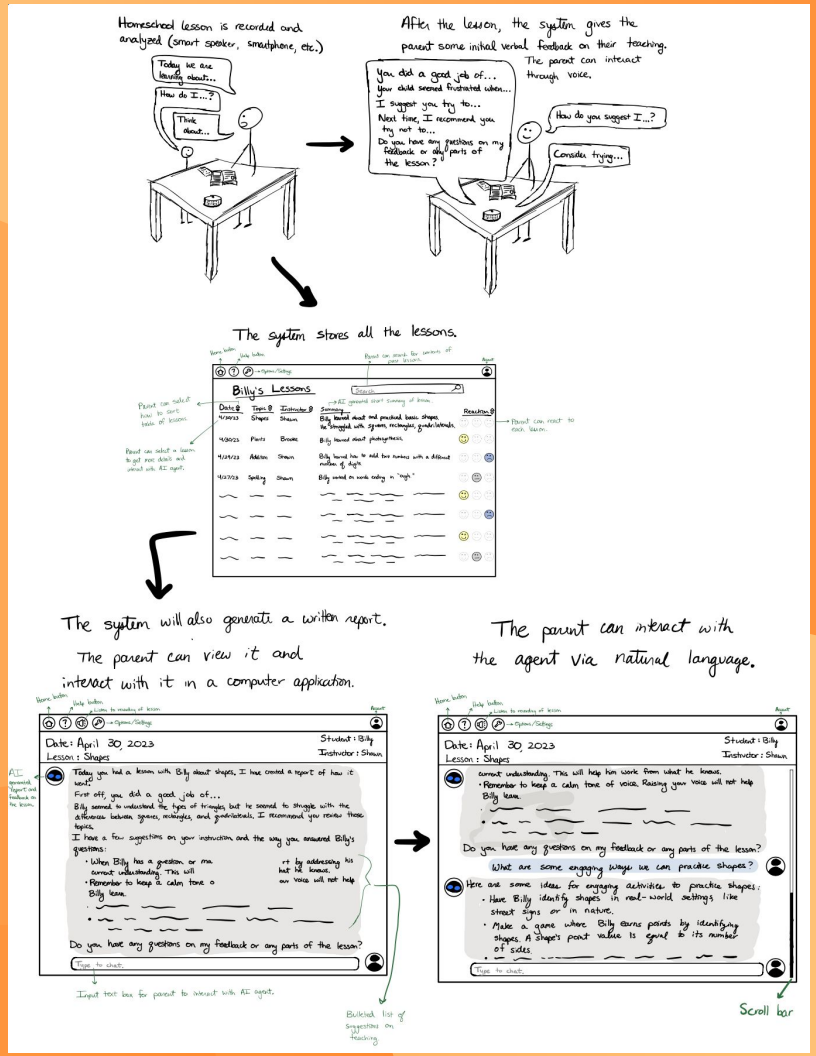
5. Mobile app



Storyboards

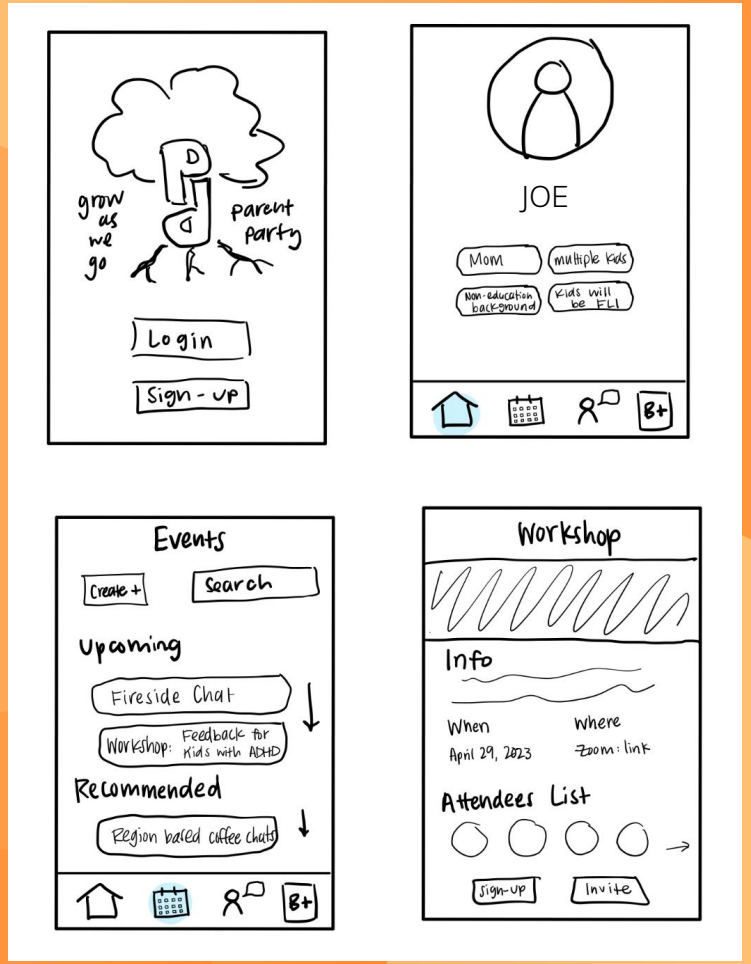
Storyboard 1:

AI lesson recorder + post-lesson feedback generation



Storyboard 2:

ParentParty: Feedback Workshops for Parents



Pros

- Creates community, options for communities with people of similar identities
- Encompasses intersectionality of identity, connections
- Provides resources to support under-resourced parents trying to support their kids
- Collaboration and knowledge-sharing
- Feels more personal

Cons

- Requires more effort/intentionality from parents
- Less inclusion of the child in the process
- Dependent on a social network for growth and retention

Parent Party

Pros

- Live data collection
- Easier for parent, no burden of time
- Takes child's learning into account in real lesson
- Data collection - makes it easier to track progress over time
- Opt in for data collection for fine tuning model

Cons

- Privacy issues with recording
- May feel impersonal
- Not immediate feedback for each lesson - just have the AI listening in
- The set-up might be difficult for people unfamiliar with the technology

Live Feedback

Pros

- Creates community, options for communities with people of similar identities
- Encompasses intersectionality of identity, connections
- Provides resources to support under-resourced parents trying to support their kids
- Collaboration and knowledge-sharing
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- Privacy issues with recording
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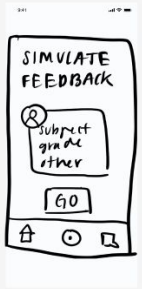
Live Feedback

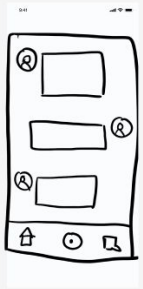
Prototype

Scan me!

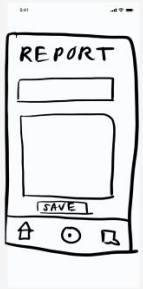
simulate



chatbot



report



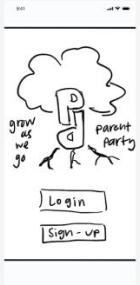
main

startrecord

liverecord

endrecord

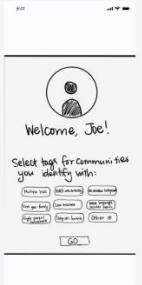
Frame 58



signup

signup2

signup3



tip

Experiment

Participants

Homeschooling mother of 3

(Zoom)

Homeschooling father of 2

(Zoom)

Homeschooling father of 4

(In-person)

Mother of 4, homeschooling youngest 2

(Zoom)

Tasks

Tasks

Task 1

Sign-up and find the “Tip of the Day”

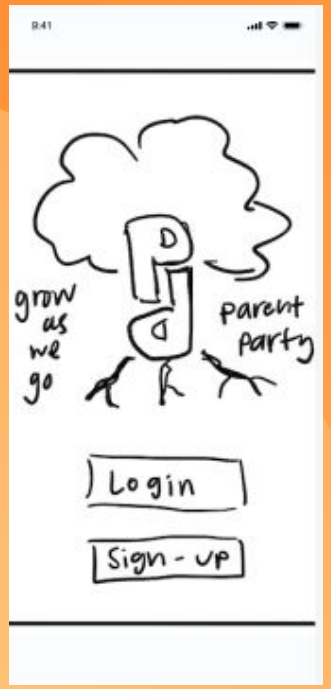
Task 2

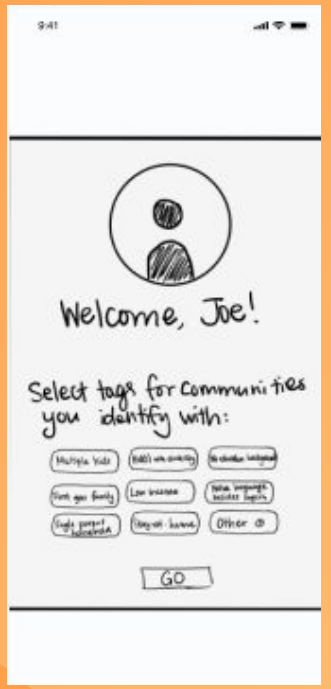
Record a live lesson and view generated feedback

Task 3

Participate in teaching and feedback simulation

1: Tip of the Day (simple)





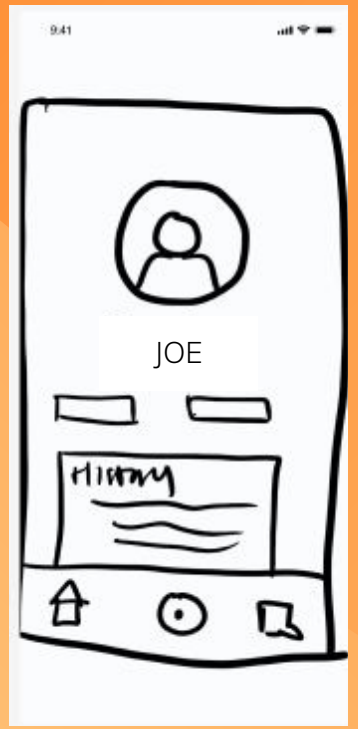
Task 1

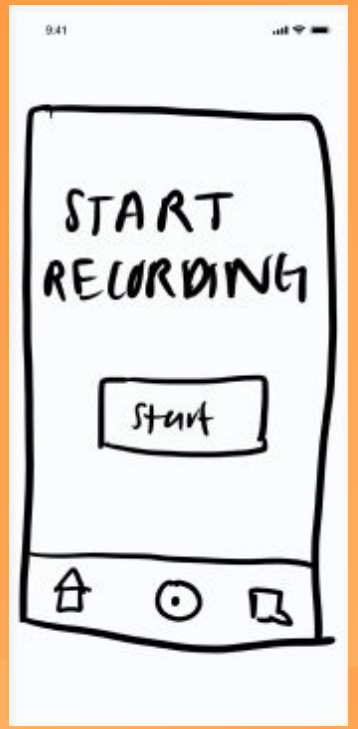
Sign-up and find the “Tip of the Day”

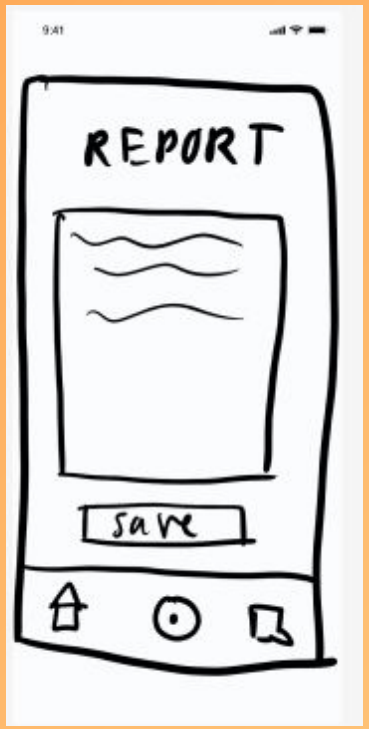
Procedure:

- Sign-up for the app
- Find the tip of the day generated for you.

2: Live Recording (moderate)

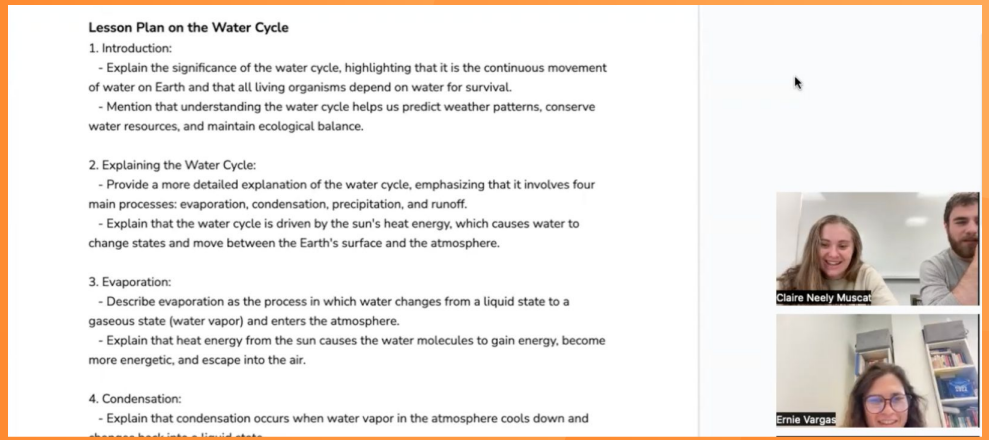






Task 2

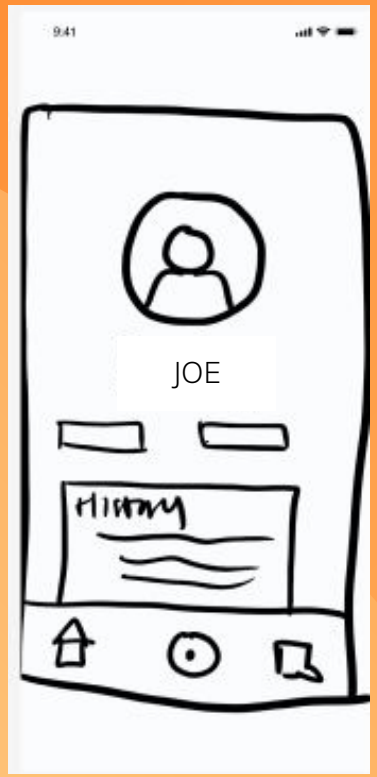
Record a live lesson and view generated feedback

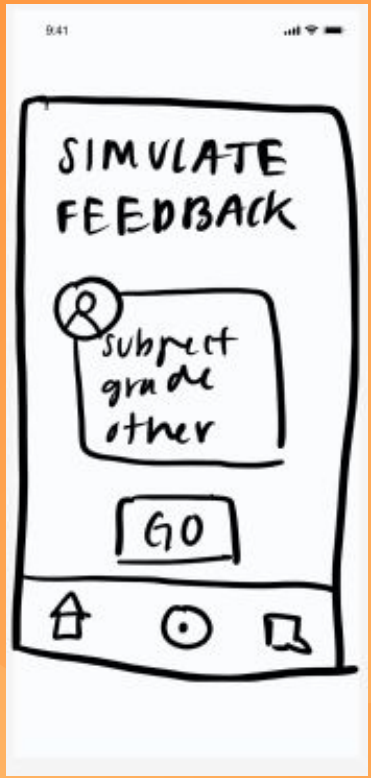


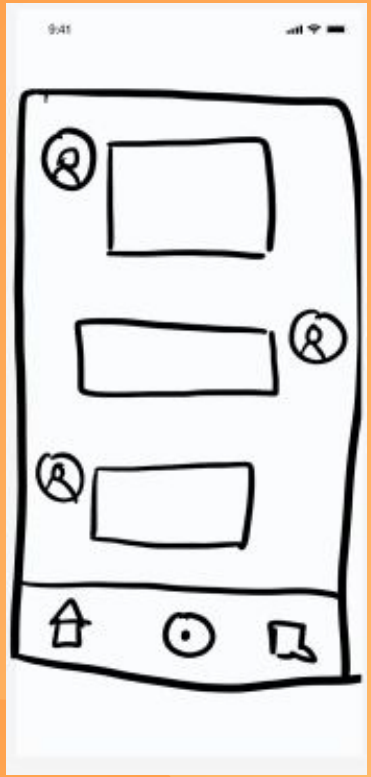
Procedure:

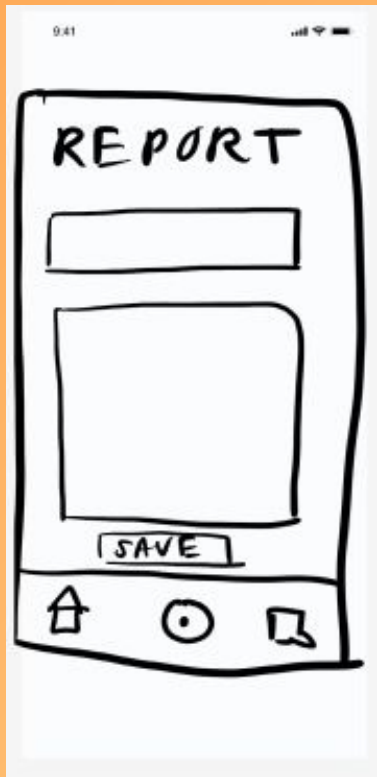
- “Record” a live lesson and interact with the feedback given by the app
- Teach on a short pre-created curriculum
- Answer student questions
- Interact with the feedback that is given to you after teaching the lesson

3: Feedback Simulator (complex)

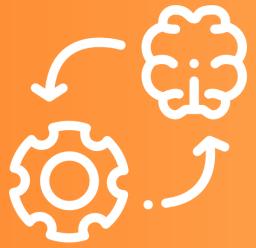




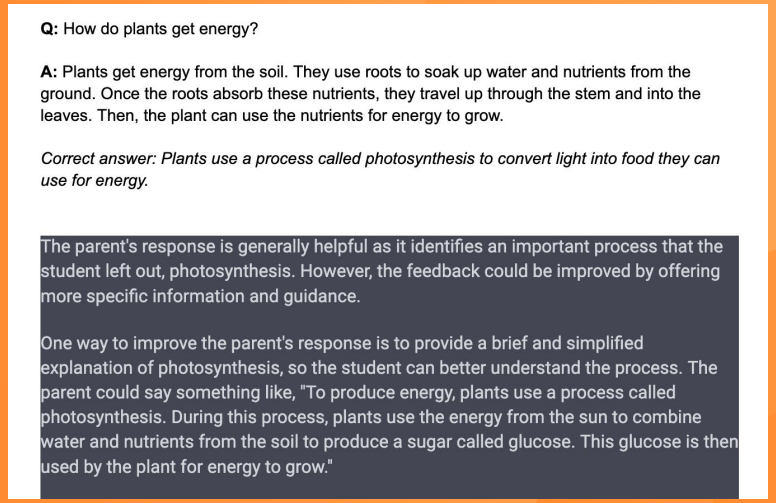




Task 3



Participate in teaching and feedback simulation



Procedure:

- Engage in simulation with AI
- Analyze practice student responses to questions
- Give student feedback on their answers
- Interact with feedback given on the feedback for the student.

Results + Key Insights

1. Time is a key resource: no time for the simulation
2. Privacy concerns: ability to edit input before sending
3. AI is non-threatening: no pressure of judgment
4. Student feedback matters: include them in the process
5. Proxy for expensive Teacher Ed programs

"(as a homeschooling parent) Your life is very integrated. It's go go go. You don't often take time to sit, pause, and look back at what you did. This encourages and forces looking back." – P1

Next Steps

1. Go deeper with the live-lesson feedback agent
2. Consider eliminating feedback simulation
3. Include child feedback about lesson
4. Ensure UI is self explanatory

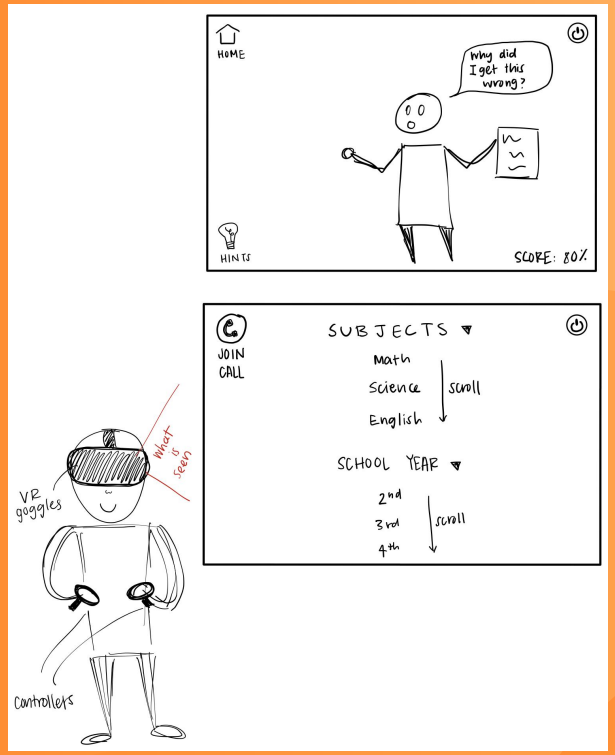
Thank you!

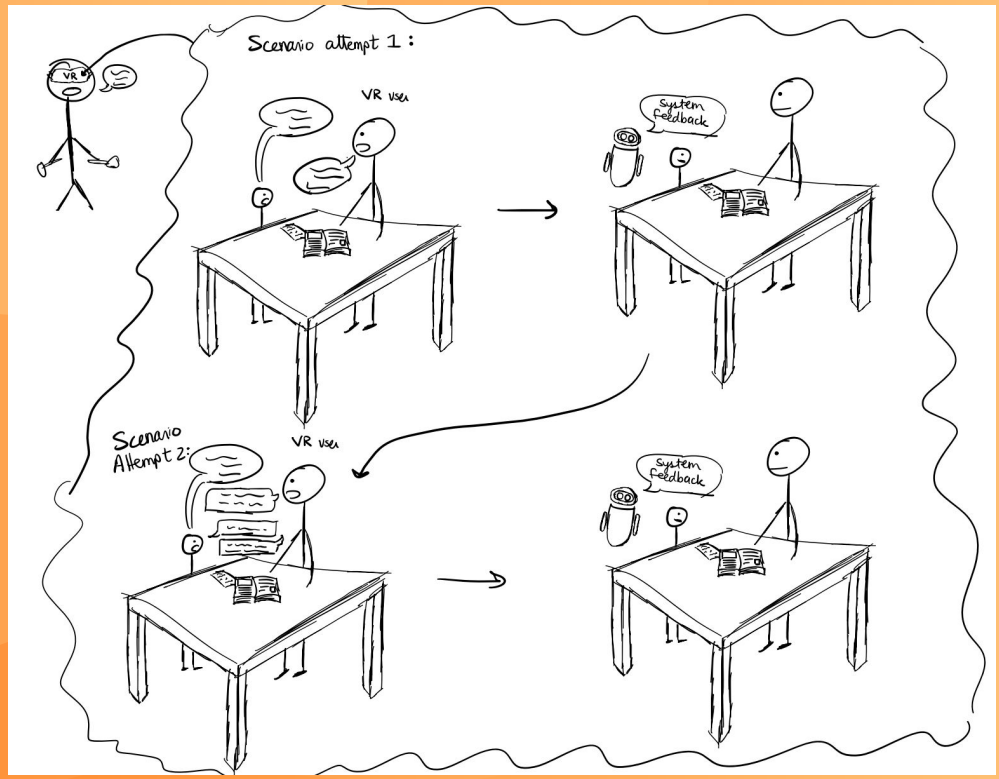
Questions? Feedback?

Appendix

Concept Sketches

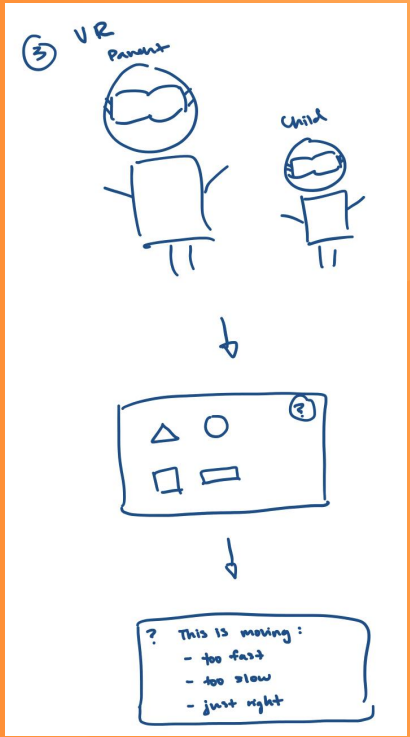
Concept Sketches - Virtual Reality



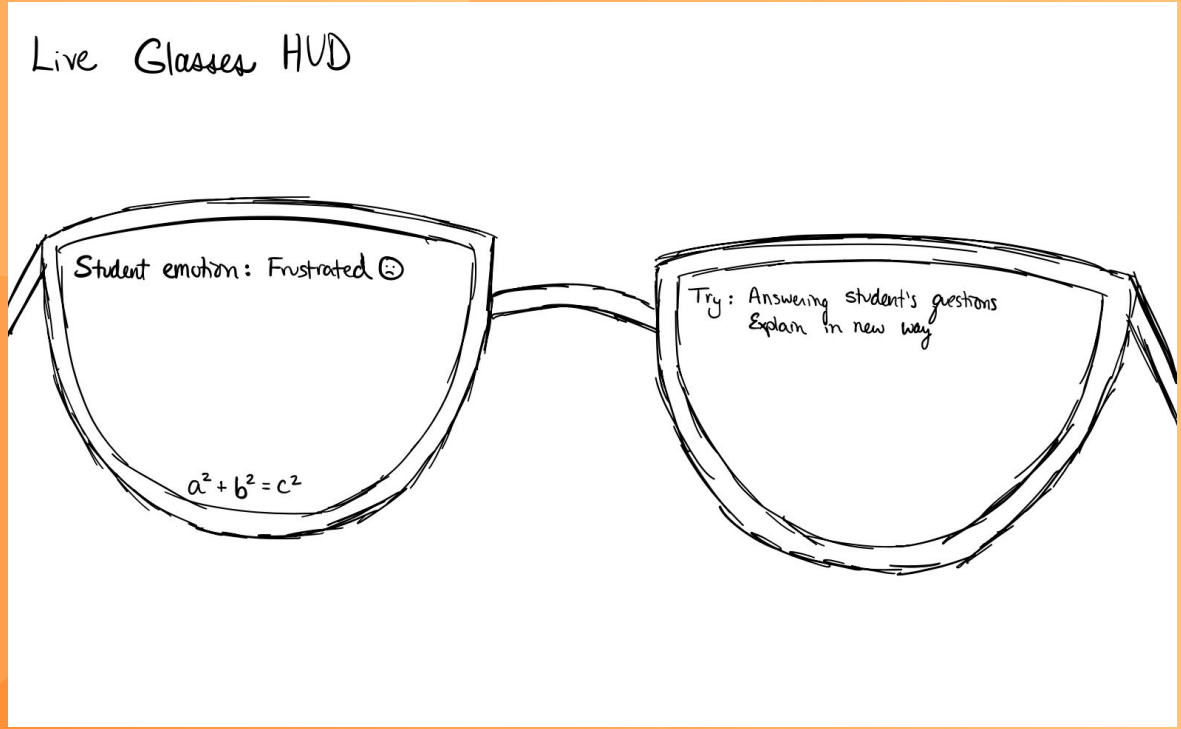


1 and 2: Virtual Reality (VR) for teaching and feedback simulation

Concept Sketches - Virtual Reality / Augmented Reality

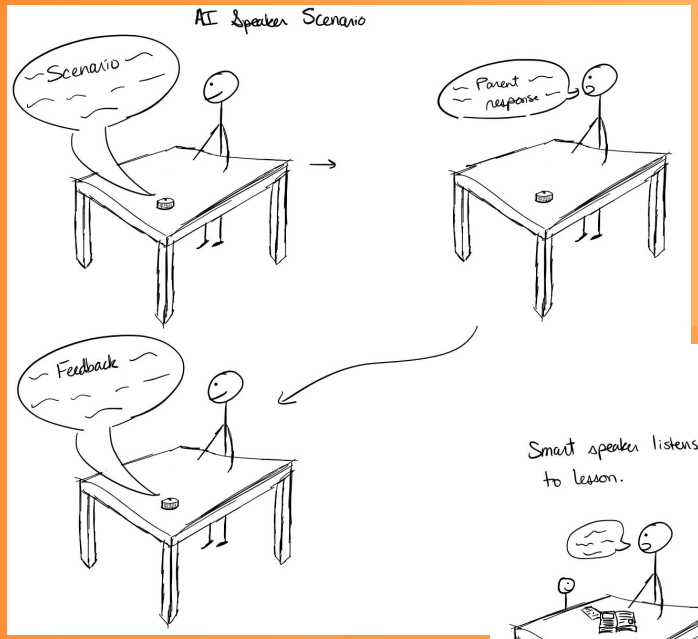


3: Virtual Reality (VR)

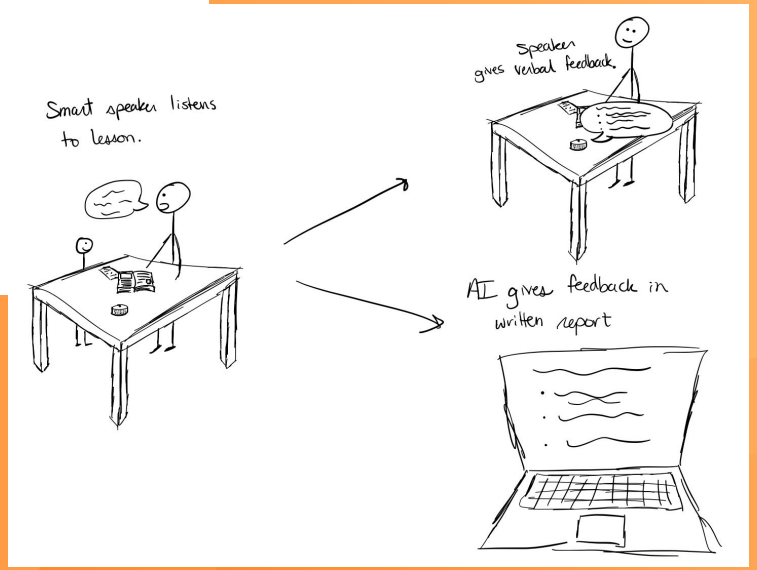


4: Augmented Reality (AR) glasses for live feedback

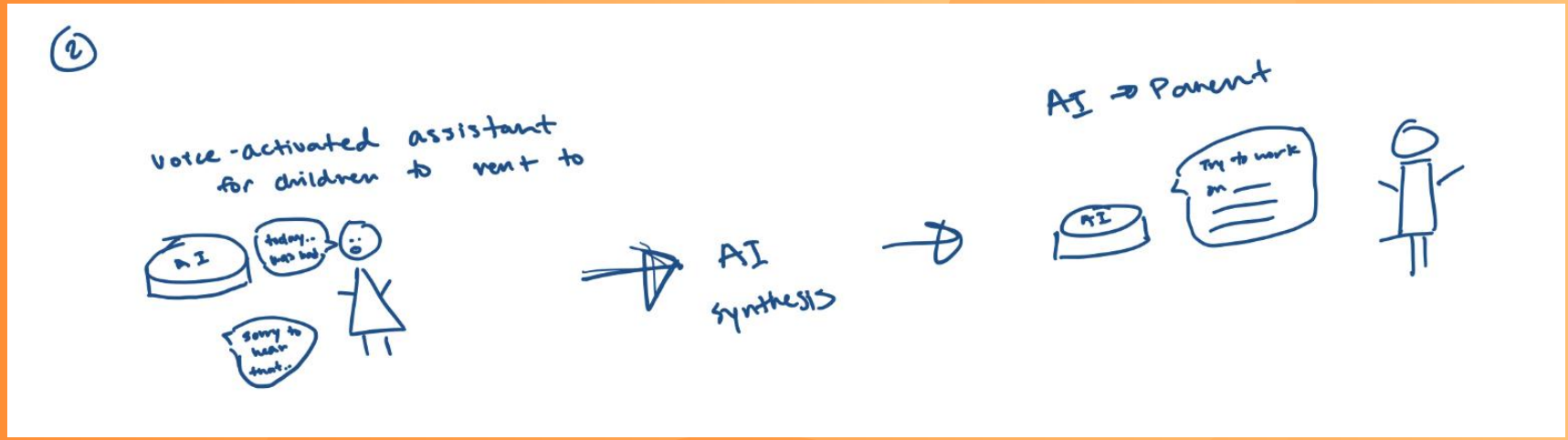
Concept Sketches



5, 6, and 7: Live-lesson recording and AI-generated reports

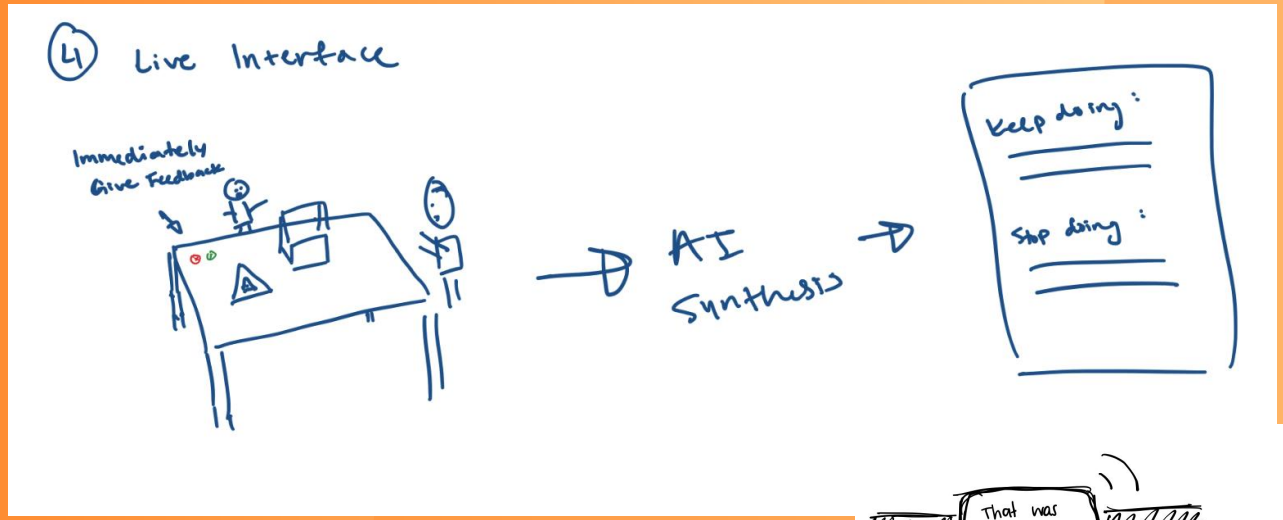


Concept Sketches

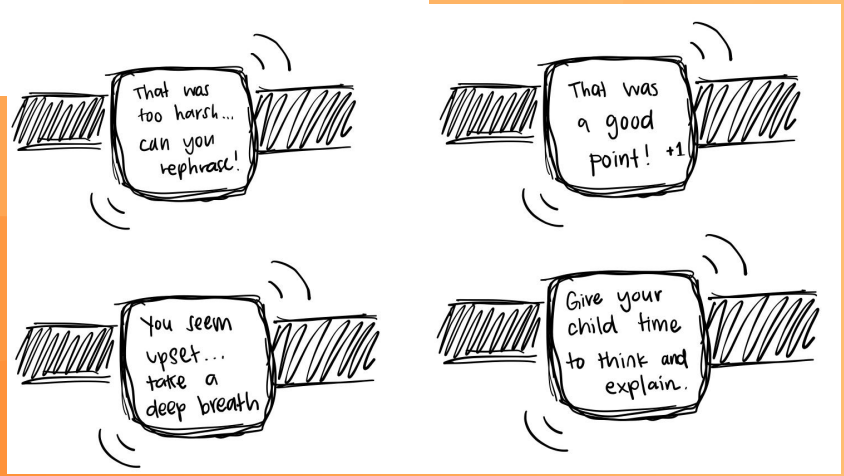


8: Voice Assistant for live feedback during lessons

Concept Sketches

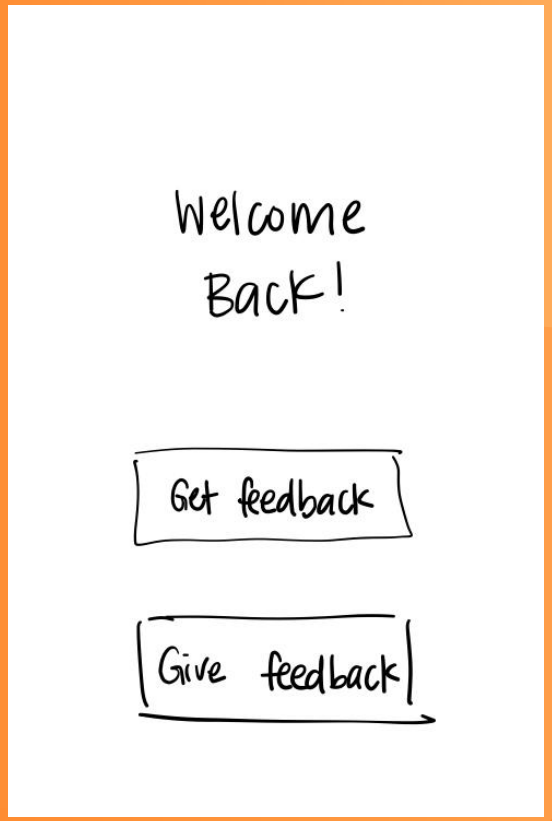


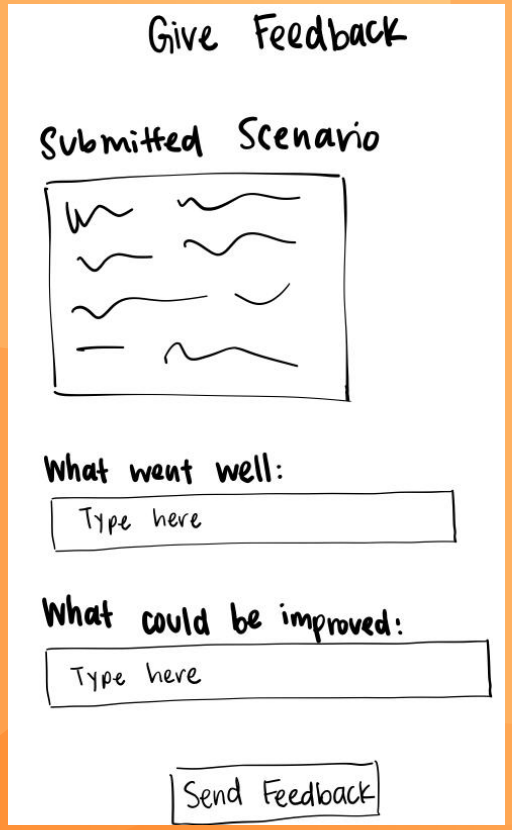
9: Table-top interface for live feedback



10: Wearables for live notifications

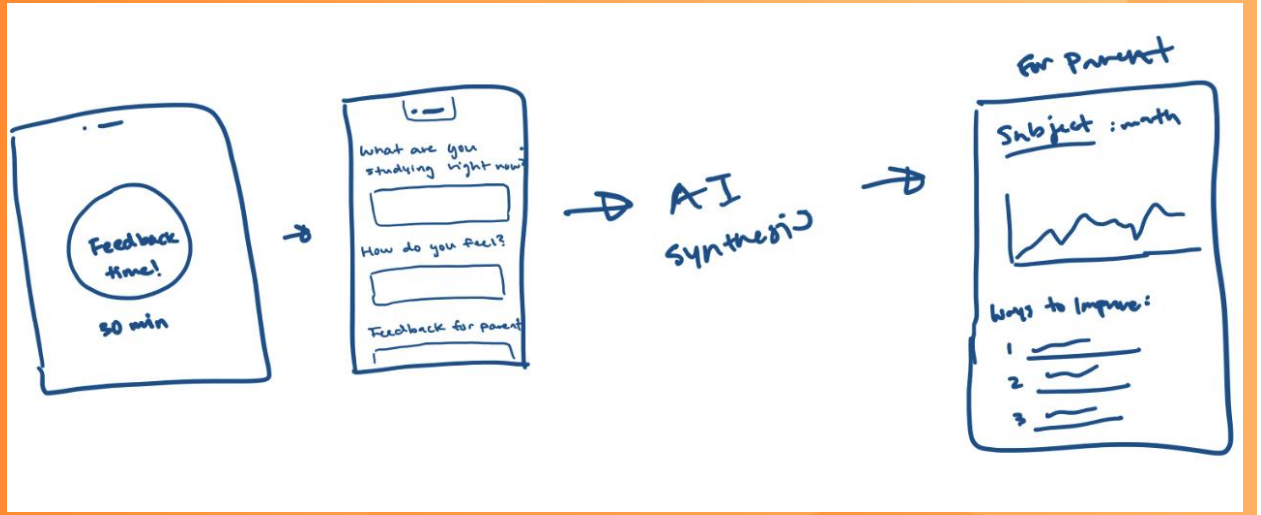
Concept Sketches



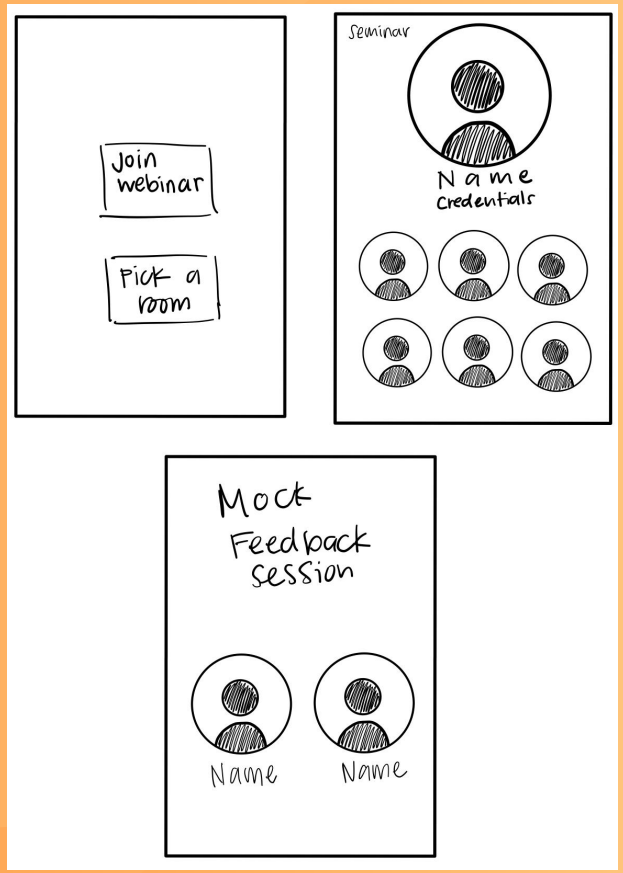


11: Mobile app for crowdsourced feedback and community

Concept Sketches

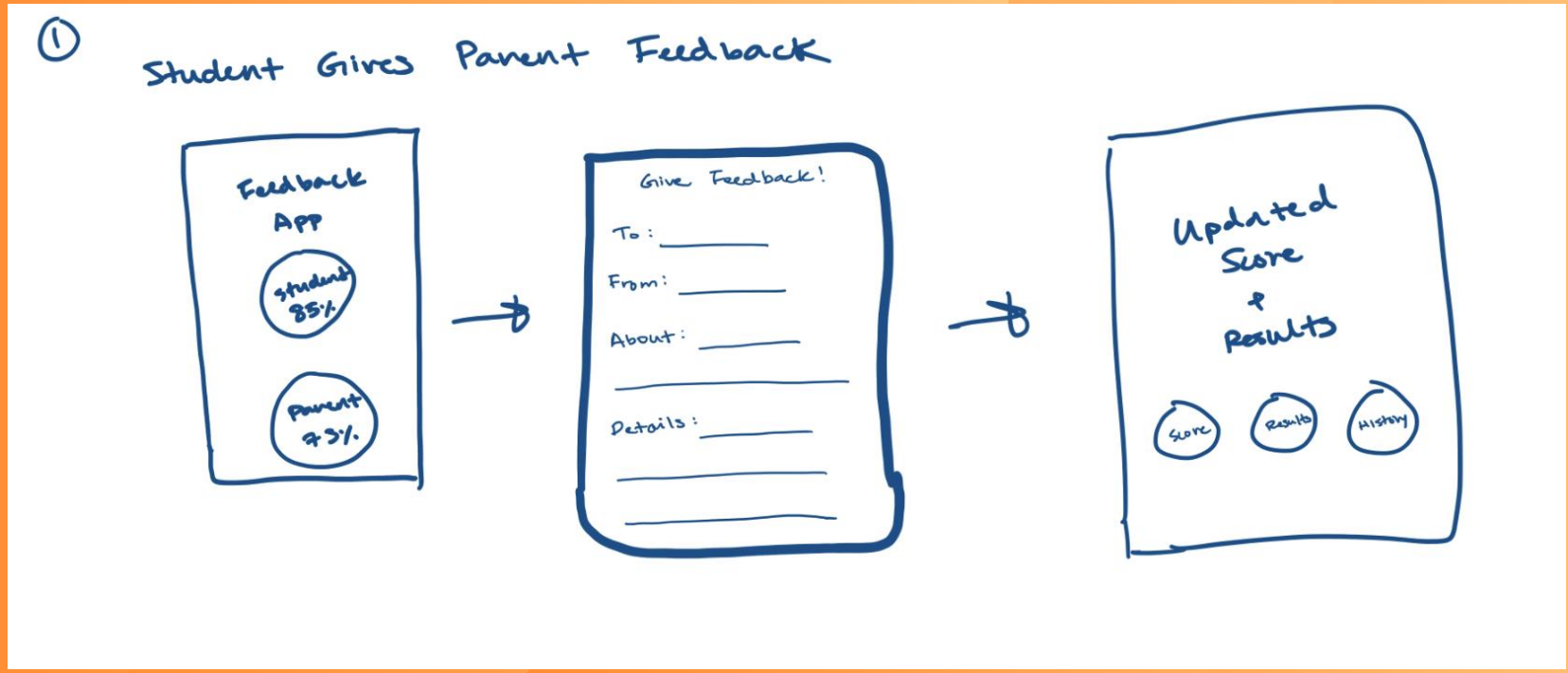


12: Mobile app for practicing feedback



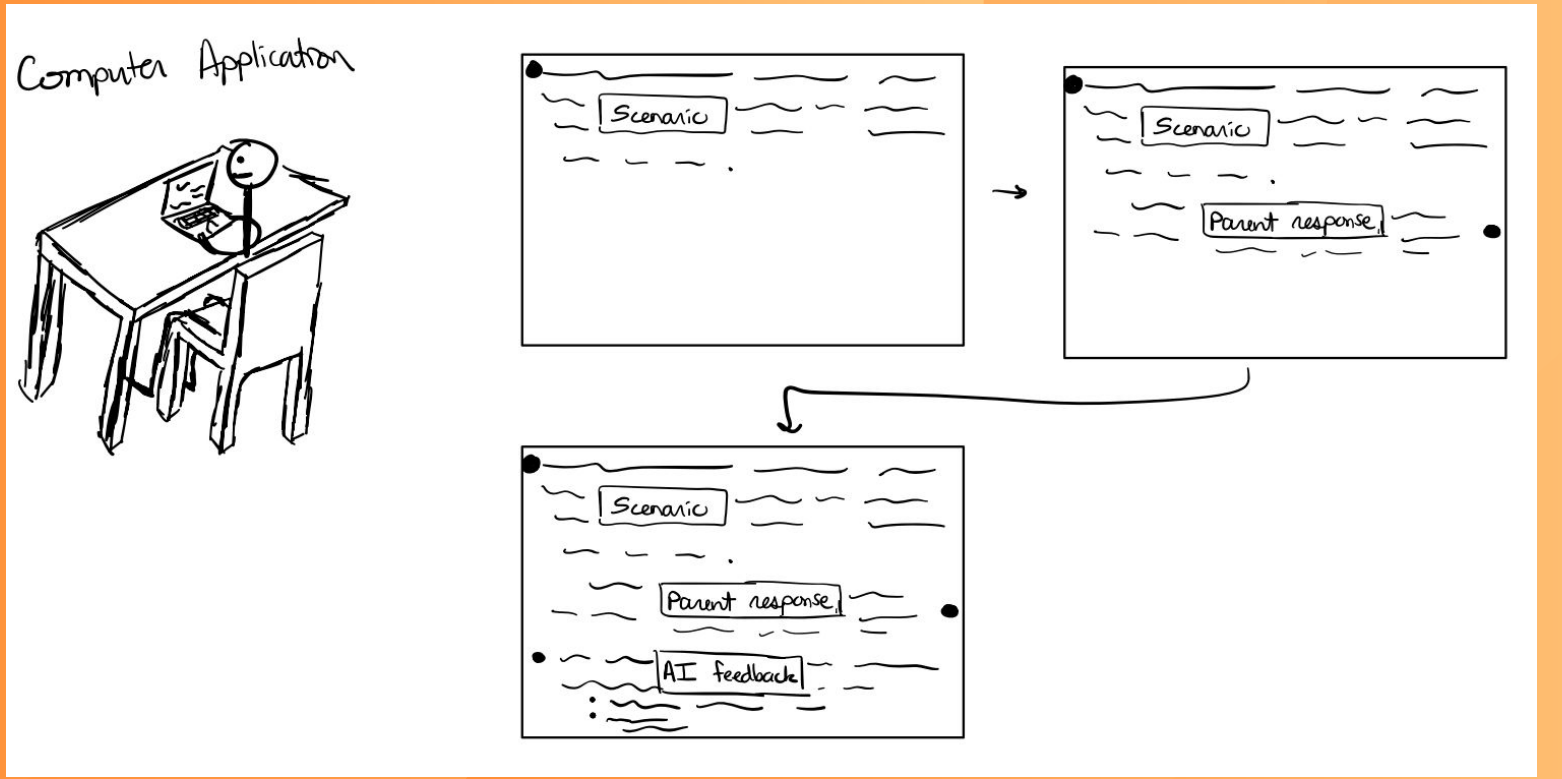
13: Mobile app for live, mock feedback sessions

Concept Sketches



14: Mobile app for performance analysis of teaching and giving feedback

Concept Sketches



15: Web app for teaching and feedback simulation

Prototype

https://www.figma.com/file/oCOuGJZPxVFXkWoMFWCuvR/CS377E?type=design&node-id=0-1&t=TDS2qfFB1HWxqe0W-0

Results

1. Simulation took too long
2. Concerns about privacy with recording
3. Parents appreciated having a consolidated resource – would like as much streamlining as possible
4. Liked live use case - can take it on the go
5. Audio recording does not capture visual aid use
6. Having examples of “good” teaching and feedback would be nice

Key Insights

1. Time is a key resource: no time for the simulation
2. Privacy concerns: ability to edit input before sending
3. AI is non-threatening: no pressure of judgment
4. Student feedback matters: include them in the process
5. Reports help parents to take the time to reflect
6. Proxy for expensive Teacher Ed programs
7. Building confidence leads to self-efficacy

"(as a homeschooling parent) Your life is very integrated. It's go go go. You don't often take time to sit, pause, and look back at what you did. This encourages and forces looking back." – P1